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Subject: Bark Beetle Activity in Oak Creek Recreation Sites (redrockrd)

To: District Ranger, Red Rock RD, Coconino NF

In August 2003, Deborah Terrion contacted me in regard to bark beetle activity in Oak Creek Canyon, Coconino NF. On September 2, we visited campgrounds and the Oak Creek Scenic Overlook to evaluate the area for bark beetle risk and current stand conditions. Our evaluation consisted of a thorough ground survey to identify currently infested trees within and adjacent to the recreation areas. In this report, I summarize bark beetle activity in selected Oak Creek recreation sites, discuss previous prevention and suppression actions to minimize bark beetle impacts in Pine Flats and Cave Springs campgrounds, and make recommendations for future actions.

#### Pine Flat and Cave Springs Campgrounds

Bark beetle populations increased dramatically in Oak Creek during 2002 in response to a severe drought. The Red Rock RD received prevention and suppression funds in FY2003 to treat both Pine Flat and Cave Springs Campgrounds. More than 800 currently infested trees were cut at Pine Flat and Cave Springs Campgrounds in April 2003 (**Figure 1**). Infested trees were treated by chipping, and then chips were hauled to an area southeast of Sedona which was distant from the ponderosa pine type (**Figure 2**). After trees were felled and lying on the ground, I was able to sample the boles to determine bark beetle species causing mortality and levels of attacks. All sampled trees were attacked by *Ips lecontei*, the Arizona five-spined ips. Western pine beetle (*D. brevicornis*) had also attacked the lower portion of the bole on a few trees. Although several additional trees were infested on the canyon walls behind the campground, no additional ponderosa pine trees were infested within the campground itself. Various beetles, including fir engraver, *Scolytus ventralis*, attacked approximately 20 fir trees.



**Figure 1.** Treatment of infested ponderosa pine by chipping at Pine Flats Campground, Red Rock RD.

No bark beetle activity was observed in the campground on the west side of Highway 89A in 2002. Previous thinning treatments in this area have led to a lower stand density with widely spaced large-diameter pine and a greater deciduous understory of oak. However, during our most recent survey, we found 9 infested ponderosa pines in one concentrated pocket next to



campsite #25. This was one of the few areas in the campground that still had relatively dense stocking of trees. In addition, 1 infested pine was found behind campsite #13.

During my inspection of Cave Springs Campground, I found 2 current infested trees near site #A4 and a pocket of 7 small-diameter, infested pines near site #E4.

#### Oak Creek Vista Recreation Site

Many ponderosa pines at the Oak Creek Vista were currently infested by *Ips* and western pine beetle during our walk-through of the site (**Figure 3**).

#### Recommendations

Control of bark beetle populations that attack ponderosa pine falls under two categories: prevention and suppression. Direct suppression actions deal with the symptoms - too many beetles in one place at one time - and are aimed at directly reducing the number of beetles present. In the long term, preventive strategies are most effective in reducing tree losses. Losses can be avoided in most cases by maintaining thrifty, vigorous trees. Thinning dense stands of ponderosa pine relieves competitive stress among the remaining trees, making them less susceptible to attack. A treatment of thinning from below to a target basal area of 80 ft.<sup>2</sup>/ac will help to reduce the overall susceptibility of the stand in the long term. Thinning slash must be removed from the site or treated in such a way as to prevent its becoming brood material for *Ips* beetles. This is extremely important to consider while bark beetle populations are high.

Valuable trees in recreation sites or near administrative structures may be sprayed with carbaryl (Sevin products) to prevent successful attack (Parker, 1991). Both the trunk and large branches (>4" diameter) should be sprayed. Because *Ips* beetles generally initiate attacks near the top of the bole, it is important that the spray reach this area. Attacking beetles die as they attempt to chew through the bark.

#### Pine Flats and Cave Springs Campgrounds

Overall, the thinning and brood tree removal treatments seemed to provide an effective means of minimizing additional impacts caused by bark beetles in 2003. Careful watch of these recreations sites is needed next year, as high populations of bark beetles remain in the area.



**Figure 2.** Chips of infested ponderosa pine hauled from Pine Flats CG, Red Rock RD.



**Figure 3.** Ponderosa pine infested by *Ips* at Oak Creek Vista, Red Rock RD.

### Oak Creek Vista

Based on the current stand conditions, setting, and high bark beetle population, ponderosa pines within the Oak Creek Vista are highly susceptible to beetle attack. Removal of infested trees and thinning of dense areas is recommended. It is recommended that the infested trees be removed this winter before the brood completes development and adult beetles emerge next spring. If trees are cut, they must either be removed from the site or, if left, should have the bark stripped off or significantly scorched to kill the developing beetle brood. As mentioned above, the chip and haul approach is an effective way of “dealing” with infested trees on a small-scale project. During the site visit to the Oak Creek Vista, Deborah Terrion and I discussed thinning strategies for the area. Thinning ponderosa pine of less than 6 inches DBH (pre-commercial) was proposed. Based on the current stand structure for the area, this prescription will reduce inter-tree competition while maintaining aesthetic qualities needed for this site.

Because these insects are very common and trees in recreation sites are typically under chronic stress, removal of infested trees and thinning are not a guarantee of protection. The use of preventive sprays to protect high-value trees within the area is warranted if approval is given at Forest and State levels. Deborah and I also discussed strategies for deciding which trees would make good candidates for spraying. We decided that only trees that were greater than 12 inches DBH, had good form and growth, and were adjacent to the parking lot should be considered candidate trees. All proposed project actions (i.e., thinning, brood tree removal, and spraying) would only take place within the boundaries of the Oak Creek Vista site.

Funds may be available for FY2004 from Forest Health Protection for prevention and suppression projects in Oak Creek Vista. Requests for these funds should be submitted no later than October 18, 2003, to the Regional Forester. If you have any questions regarding my assessment of current bark beetle activities within the project area, its potential effect on residual standing trees, or my recommendations, please let me know. I can be reached at (928) 556-2074.

/s/ Joel D. Mcmillin  
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### References Cited

Parker, D.L. 1991. Integrated pest management guide: Arizona five-spined Ips, *Ips lecontei* Swaine, and Pine engraver, *Ips pini* (Say), in ponderosa pine. USDA Forest Service, Southwestern Region, R-3, 91-8. 17 p.